

# PROTECTIVE GARMENT ADAPTED TO BE SELECTIVELY CONFIGURED

## FIELD OF THE INVENTION

This invention pertains to a protective garment, such as a protective garment for a firefighter, which has an outer shell and which can be selectively configured so as to have no liner, one liner, or two liners. Herein, all references to protective garments are to be broadly construed to refer to pants, coats, jackets, overalls, and coveralls.

## BACKGROUND OF THE INVENTION

The National Fire Protection Association (NFPA) has promulgated standards—see NFPA 1971 Standard on Protective Ensemble for Structural Firefighting (2000 Edition)—for protective clothing for firefighters fighting structural fires. The National Fire Protection Association has promulgated standards—see NFPA 1977 Standard on Protective Clothing and Equipment for Wildland Firefighting (1998 Edition)—for protective clothing for firefighters engaged in fighting wildland fires. Presently, the National Fire Protection Association is contemplating standards for protective clothing for firefighters engaging in what are known as technical rescues, such as extracting victims from automobile wrecks.

As contemplated by the aforementioned standards for protective clothing for firefighters fighting structural fires, a protective garment has an outer shell, which provides abrasion resistance and puncture resistance, a liner including a moisture barrier, and a thermal liner. Conventionally, as known heretofore, the liner including the moisture barrier and the thermal liner are sewn together or are bonded together, and the sewn-together or bonded-together liners are attached detachably to and within the outer shell by suitable fasteners, such as zippers, hook-and-loop fasteners, and snap fasteners. Thus, if the moisture barrier fails while the thermal liner remains useful, the liner including the moisture barrier cannot be easily replaced, apart from the thermal liner.

Alternatively, as known heretofore, the liner including the moisture barrier is sewn to and within the outer shell and the thermal liner is attached detachably to the outer shell, within the liner including the moisture barrier. Thus, if the moisture barrier fails while the outer shell remains useful, the moisture barrier cannot be easily replaced, apart from the outer shell.

As contemplated by the aforementioned standards for protective clothing for firefighters fighting wildland fires, a protective garment has an outer shell, which provides abrasion resistance and puncture resistance. Although a liner including a moisture barrier and a thermal liner are not needed, a thermal liner may be optionally included, as for wearing under cold winter conditions. If a thermal liner is included, the thermal liner is attached detachably to and within the outer shell by suitable fasteners, such as zippers, hook-and-loop fasteners, or snap fasteners.

The aforementioned standards contemplated for protective garments for firefighters engaging in technical rescues are expected to provide that a protective garment has an outer shell, which provides abrasion resistance and puncture resistance, and a liner including a moisture barrier. Furthermore, the contemplated standards are expected to permit the liner including the moisture barrier to be detachably attached to and within the outer shell by suitable fasteners, such as zippers, hook-and-loop fasteners, or snap fasteners.

Protective garments conforming to the aforementioned standards for protective clothing for firefighters fighting struc-

tural fires and protective garments conforming to the aforementioned standards for protective clothing for firefighters fighting wildland fires are available commercially from Morning Pride Manufacturing, L.L.C. of Dayton, Ohio, and from other sources.

## SUMMARY OF THE INVENTION

Broadly, this invention provided a protective garment comprising an outer shell and two liners. Each said liner is adapted to be separately and detachably attached to and within the outer shell. The garment is adapted to be selectively configured with neither said liner so attached, with either one of said liners so attached, or with both said liners so attached. Preferably, one such liner is a thermal liner and the other liner includes a moisture barrier. Preferably, moreover, the outer shell provides abrasion resistance, puncture resistance, or both.

Specifically, this invention provides a protective garment that can be selectively configured so as to be particularly suited for a firefighter fighting a wildland fire, for a firefighter fighting a structural fire, or for a worker engaging in a technical rescue. Thus, the garment comprises an outer shell, which provides abrasion resistance, puncture resistance, or both, a thermal liner, and a separate liner, which includes a moisture barrier. Each said liner is adapted to be separately and detachably attached to and within the outer shell.

Specifically, moreover, the garment is adapted to be selectively configured with neither said liner so attached or with the thermal liner so attached, so as to be particularly suited for a firefighter fighting a wildland fire, with both said liners so attached, so as to be particularly suited for a firefighter fighting a structural fire, or with the separate liner including the moisture barrier so attached, so as to be particularly suited for a firefighter engaging in a technical rescue.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a fragmentary, sectional, exploded view of a protective garment embodying this invention in a first embodiment configured with an outer shell, with a thermal liner, and with a liner including a moisture barrier. The liner including the moisture barrier is interposed between the outer shell and the thermal liner so that the moisture barrier faces the outer shell.

FIG. 1B is a fragmentary, sectional, exploded view of a protective garment embodying this invention in a second embodiment configured with an outer shell, with a thermal liner, and with a liner including a moisture barrier. The liner including the moisture barrier is interposed between the outer shell and the thermal liner so that the moisture barrier faces the thermal liner.

FIG. 2 is a fragmentary, sectional, exploded view of a protective garment embodying this invention in a third embodiment comprising and being configured with an outer shell and with a liner including a moisture barrier but not with a thermal liner. The liner including the moisture barrier is disposed so that the moisture barrier faces the outer shell.

FIG. 3 is a fragmentary, sectional, exploded view of a protective garment embodying this invention in a fourth embodiment comprising and being configured with an outer shell and with a thermal liner but not with a liner including a moisture barrier.

FIG. 4 is a fragmentary view of a protective garment embodying this invention in a fifth embodiment configured